5.1.3)

$$G_{00}=\begin{bmatrix}1 & 1\\ 1 & 1\end{bmatrix},\ G_{01}=\begin{bmatrix}1 & -1\\ 1 & -1\end{bmatrix}$$

$$G_{10}=\begin{bmatrix}1 & 1\\ -1 & -1\end{bmatrix},\ G_{11}=\begin{bmatrix}1 & -1\\ -1 & 1\end{bmatrix}$$

a.) $\langle G_{00}, G_{01}\rangle = 1(1)+1(-1)+1(1)+1(-1)=0$

$\langle G_{00}, G_{10}\rangle = 1(1)+1(1)+1(-1)+1(-1)=0$

$\langle G_{00}, G_{11}\rangle = 1(1)+1(-1)+1(-1)+1(1)=0$

$\langle G_{01}, G_{10}\rangle = 1(1)+1(-1)-1(1)-1(-1)=0$

$\langle G_{01}, G_{11}\rangle = 1(1)-1(-1)+1(-1)-1(1)=0$

$\langle G_{10}, G_{11}\rangle = 1(1)+1(-1)-1(-1)-1(1)=0$

b.) $\langle G_{00}, G_{00}\rangle = 1(1)+1(1)+1(1)+1(1)=4$

$\langle G_{01}, G_{01}\rangle = 1(1)-1(-1)+1(1)-1(-1)=4$

$\langle G_{10}, G_{10}\rangle = 1(1)+1(1)-1(-1)-1(-1)=4$

$\langle G_{11}, G_{11}\rangle = 1(1)-1(-1)-1(-1)+1(1)=4$

$\langle G_{00}, G_{00}\rangle = 4 \quad \langle G_{10}, G_{10}\rangle = 4$

$\langle G_{01}, G_{01}\rangle = 4 \quad \langle G_{11}, G_{11}\rangle = 4$

5.1.5)

$$A = 2\begin{bmatrix}2 & 0\\ 1 & 0\end{bmatrix} - 2\begin{bmatrix}1 & 0\\ -2 & 0\end{bmatrix} + 3.2\begin{bmatrix}0 & 2\\ 0 & 1\end{bmatrix} - 2.4\begin{bmatrix}0 & 1\\ 0 & -2\end{bmatrix}$$

5.1.14)

$$A = 5\begin{bmatrix}1 & 1\\ 1 & 1\end{bmatrix} - 1\begin{bmatrix}1 & -1\\ 1 & -1\end{bmatrix} - 2\begin{bmatrix}1 & 1\\ -1 & -1\end{bmatrix} + 0\begin{bmatrix}1 & -1\\ -1 & 1\end{bmatrix}$$